IN THE CLAIMS:

The pending claims are set forth below and have been amended and/or cancelled, without prejudice, where noted:

1. (Previously Presented) A retrofitted gas flow catalyst bed reactor assembly, comprising:

an existing gas flow catalyst bed reactor assembly comprised of:

a reaction vessel, a displacement cylinder within said reaction vessel, said displacement cylinder having an interior wall and an exterior wall, and a catalyst bed between an inner surface of the reaction vessel and the exterior of the displacement cylinder having a top half and a bottom half, wherein the reactor is retrofitted by adding at least one baffle to an outside of the top half of the displacement cylinder to improve fluid flow in the reaction vessel and across the catalyst bed.

2. (Previously Presented) The assembly of claim 1 wherein at least three baffles are added to the exterior of the displacement cylinder.

3. (Previously Presented) The assembly of claim 1 wherein the catalyst bed is annular and is positioned at a distance from the displacement cylinder, and wherein the at least one baffle does not extend more than half of a distance from the displacement cylinder to an inner wall of the catalyst bed.

4-8. (Canceled)

9. (Previously Presented) The assembly of claim 1 having a series of flow baffles that extend radially outward from the displacement cylinder to direct a longitudinal flow of gases in the catalyst bed into a radial flow, to thereby improve a uniformity of said gas flow across the catalyst bed.

10. (Previously Presented) The assembly of claim 1 wherein the existing reactor can be modified without disassembling the reactor.

11. (Previously Presented) The assembly of claim 10 wherein the displacement cylinder is of a sufficient width for cutting a man way into the top to thereby allow retrofitting of the baffles from an inside of the displacement cylinder.

12. (Previously Presented) The assembly of claim 11 wherein the cylinder wall is cut at a desired location to allow insertion of the baffles through the wall and welding of the baffles from the inside of the displacement cylinder.

13. (Previously Presented) The assembly of claim 1 wherein at least two baffles are added to the top half of the displacement cylinder of the reactor to allow more uniform fluid flow through the reactor.

14. (Previously Presented) The assembly of claim 13 wherein the addition of the baffles cause a minimal increase in pressure drop and a maximum effect on fluid flow normalization.

15. (Previously Presented) The assembly of claim 1 wherein the catalyst is comprised of a concentric cylindrical catalyst shell made of a perforated or porous inner wall and a perforated or porous outer wall.

16. (Previously Presented) The assembly of claim 1 further comprised of an ethylbenzene feedstock, wherein said assembly facilitates dehydrogenation of ethylbenzene into styrene monomer.

17. (Previously Presented) A method for retrofitting the assembly of Claim 1 for ethylbenzene dehydrogenation, comprising:

obtaining an ethylbenzene dehydrogenation reactor that has an outer reactor shell, an inner displacement vessel having and interior wall and an exterior wall, and a catalyst bed located between the reactor shell and the inner displacement vessel, wherein said reactor catalyst bed is constructed without baffles;

evaluating the dehydrogenation reactor for retrofitting with baffles simulating fluid flow through the reactor to reflect actual operations;

simulating fluid flow improvements, wherein said improvements comprise addition of baffles to the displacement column at locations that exhibit higher fluid flow velocities;

• using simulation to determine a location, size, and number of baffles to provide a more uniform fluid flow;

wherein the flow simulation is comprised of a steady state flow simulation; and

wherein baffles are added to the exterior of the displacement column based upon simulation results, without disassembling the reactor.

18. (Previously Presented) The method of claim 17 wherein the flow simulation is comprised of a cold flow simulation conducted using a two-dimensional axis-symmetric reactor model

19. (Previously Presented) The method of claim 17 wherein the flow simulation is comprised of calculation of a velocity profile and pressure for each cell within a geometry of the reactor.

20. (Previously Presented) The method of claim 17 wherein the baffles are attached to the exterior of the displacement cylinder at specific locations to reduce a flow rate in the higher fluid velocity locations of the reactor.

21. (Previously Presented) A process for improving catalyst life in an ethylbenzene dehydrogenation reactor using the method of claim 17, wherein the fluid flow simulations are conducted using actual reactor conditions, and wherein at least two baffles are added to the outside of the displacement vessel based upon said simulations to improve simulated fluid flow.

22. (Previously Presented) The assembly of claim 1 wherein said baffles extends a catalyst life by increasing an efficiency of a flow in the reactor both in the axial and vertical directions.